

## CHAPTER 1 GENERAL DESCRIPTION

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### 1.1 Introduction

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Chapter 1 gives general information and specifications.

Chapter 2 contains all necessary information for installing.

Chapter 3 informs about the necessary maintenance.

Chapter 4 informs about programming.

Chapter 5 contains all electrical drawings.

Chapter 6 deals with "engineering change orders" (ECO's).

Appendix 1 standard address and vector prom list.

### 1.2 Purpose

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DTC 4S is a dual width card, that plugs directly into the LSI-11 Q-bus.

The card contains 4 independent asynchronous serial line interfaces.

Each channel has its own EIA RS232 interface, with selection of data rate, data format, Q-bus address and interrupt vector address.

The DTC4S connects to external devices through a 40 pin connector. At the end of this cable there's a connector-assembly which provides four 25 pin D-type connector, switches for data-rates and jumpers. (for setting see section 3). The connector assembly is called RS3000, and is standard included with the DTC4S.

As an option, there are two types of current loop adaptors:

- CL1000 four channels 20 mA current loop, up to 9600 baud.
- CL2000 four channels 20 mA current loop, up to 19200 baud.

Both are jumper selectable for active or passive operation. The option can be plugged easily onto the RS3000 assembly.

If current loop option is installed, RS232 as well as CL is available for transmitted data.

Received data can be jumpered per channel for RS or CL (RS3000 brd).

When the currentloop adaptor is strapped as passive, the adaptor provides a galvanic insulation between terminal and interface.



1. The first part of the report is devoted to a general survey of the situation in the country.

2. The second part is devoted to a detailed analysis of the economic situation.

3. The third part is devoted to a detailed analysis of the social situation.

4. The fourth part is devoted to a detailed analysis of the political situation.

5. The fifth part is devoted to a detailed analysis of the cultural situation.

6. The sixth part is devoted to a detailed analysis of the scientific situation.

7. The seventh part is devoted to a detailed analysis of the educational situation.

8. The eighth part is devoted to a detailed analysis of the health situation.

9. The ninth part is devoted to a detailed analysis of the housing situation.

10. The tenth part is devoted to a detailed analysis of the transport situation.

11. The eleventh part is devoted to a detailed analysis of the foreign relations situation.

12. The twelfth part is devoted to a detailed analysis of the international situation.

13. The thirteenth part is devoted to a detailed analysis of the world situation.

14. The fourteenth part is devoted to a detailed analysis of the future of the country.

15. The fifteenth part is devoted to a detailed analysis of the future of the world.

16. The sixteenth part is devoted to a detailed analysis of the future of humanity.

17. The seventeenth part is devoted to a detailed analysis of the future of the universe.

18. The eighteenth part is devoted to a detailed analysis of the future of the cosmos.

19. The nineteenth part is devoted to a detailed analysis of the future of the galaxy.

20. The twentieth part is devoted to a detailed analysis of the future of the universe.

21. The twenty-first part is devoted to a detailed analysis of the future of the universe.

22. The twenty-second part is devoted to a detailed analysis of the future of the universe.

23. The twenty-third part is devoted to a detailed analysis of the future of the universe.

24. The twenty-fourth part is devoted to a detailed analysis of the future of the universe.

25. The twenty-fifth part is devoted to a detailed analysis of the future of the universe.

26. The twenty-sixth part is devoted to a detailed analysis of the future of the universe.

27. The twenty-seventh part is devoted to a detailed analysis of the future of the universe.

28. The twenty-eighth part is devoted to a detailed analysis of the future of the universe.

29. The twenty-ninth part is devoted to a detailed analysis of the future of the universe.

30. The thirtieth part is devoted to a detailed analysis of the future of the universe.

31. The thirty-first part is devoted to a detailed analysis of the future of the universe.

32. The thirty-second part is devoted to a detailed analysis of the future of the universe.

33. The thirty-third part is devoted to a detailed analysis of the future of the universe.

34. The thirty-fourth part is devoted to a detailed analysis of the future of the universe.

35. The thirty-fifth part is devoted to a detailed analysis of the future of the universe.

36. The thirty-sixth part is devoted to a detailed analysis of the future of the universe.

37. The thirty-seventh part is devoted to a detailed analysis of the future of the universe.

38. The thirty-eighth part is devoted to a detailed analysis of the future of the universe.

39. The thirty-ninth part is devoted to a detailed analysis of the future of the universe.

40. The fortieth part is devoted to a detailed analysis of the future of the universe.

41. The forty-first part is devoted to a detailed analysis of the future of the universe.

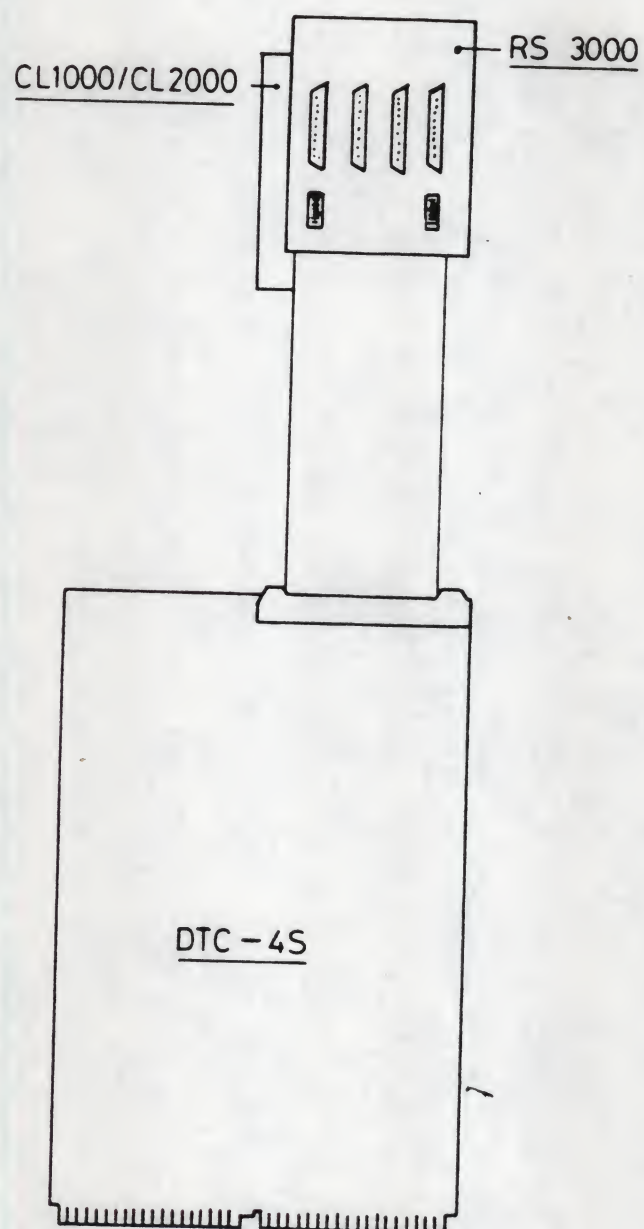
42. The forty-second part is devoted to a detailed analysis of the future of the universe.

43. The forty-third part is devoted to a detailed analysis of the future of the universe.

44. The forty-fourth part is devoted to a detailed analysis of the future of the universe.

45. The forty-fifth part is devoted to a detailed analysis of the future of the universe.





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### 1.3 Specifications

#### 1.3.1 Physical dimensions

PCB thickness : 1.6 mm  
width : 133 mm  
length : 229 mm (including plastic handles)  
max comp. height : 10 mm  
total thickness : 12.5 mm

#### 1.3.2 Operating environment

Temperature : ambient air temperature range of 0 to +55 degrees C  
Thermal shock : 30 degrees C per hour  
Humidity : 0 to 95% relative humidity (non condensing)  
Cooling : Suggested air flow of 25 cfm

#### 1.3.3 Shipping environment

Temperature : the DTC4S can withstand a temperature range of -40 to +85 degrees C during shipping and storage.  
Thermal shock : 10 degrees C per minute.  
Mechanical shock : The DTC4S module housed in its shipping-container can withstand a mechanical shock resulting of a drop conforming to test in accordance with MIL-STD-810B, method 516, procedure V without any damage or degradation.

#### 1.3.4 Power requirements

	without adaptor	rs232	current loop
+ 5V	0.8A	0.9A	1.1A
+12V	0.08A	0.1A	0.4A

Internal generation of -12V

#### 1.3.5 Addressing and speed range

Addressing range: 174000-177770 (prom selectable)  
Vector range: 0-774 (prom selectable)

Speed selection: 50,75,110,134.5,150,300,600,1200,1800,2000  
2400,3600,4800,7200,9600,19200 baud.  
(jumper or switch or remote selectable see 3.4)

#### 1.3.6 Reliability

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The DTC4S modules are designed to meet the best commercial standards of workmanship. Extensive testing is conducted to ensure a reliable service over the products' lifetime.

#### 1.4 Options

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As an option there are two types of current loop adaptors:

- CL1000, four channel 20 mA current loop, up to 9600 baud.
- CL2000, four channel 20 mA current loop, up to 19200 baud.

Both are jumper selectable for active or passive operation. The option can be plugged easily onto the RS3000 assembly.

If current loop option is installed, RS232 as well as CL is available for transmitted data.

Received data can be jumpered per channel for RS or CL. Jumper position q and k on the RS3000 board.

## CHAPTER 2 INSTALLATION

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The section contains information on procedures to install DTC4S modules in Q-bus computer systems.

Installation should be performed by qualified personnel only. Incorrect installation cannot only damage the interface board, but also all other system components.

After carefully unpacking the interface board, it should be inspected for any physical damage. If any damage is found or expected, contact your distributor and do not install the board.

### 2.1 Switches/Jumpers DTC4S

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#### 2.1.1 Address selection

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The address selection is performed by inserting the correct prom, with programmed pattern, into the prom-position marked as Ax. The addresses of all channels have to be within the range of 174000-177770. Appendix 1 shows the standard address selections. Other combinations can be made by Datelcare on customer request.

#### 2.1.2 Vector selection

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The vector selection is performed by inserting the correct prom, with programmed pattern, into the prom-position marked as Cx. The vectors of all channels have to be within the range of 000-774. Appendix 1 shows the standard vector selections. Other combinations can be made by Datelcare on customer request.



Dear Sir,  
 I have the honor to acknowledge the receipt of your letter of the 17th inst. and in reply to inform you that the same has been forwarded to the proper authorities for their consideration.

I am, Sir, very respectfully,  
 Yours truly,  
 J. H. [Signature]

Enclosed for you are two copies of the report of the committee on the subject of the proposed amendment to the constitution of the [Organization].

I am, Sir, very respectfully,  
 Yours truly,  
 J. H. [Signature]

Very respectfully,  
 J. H. [Signature]

I am, Sir, very respectfully,  
 Yours truly,  
 J. H. [Signature]

I am, Sir, very respectfully,  
 Yours truly,  
 J. H. [Signature]

I am, Sir, very respectfully,  
 Yours truly,  
 J. H. [Signature]

I am, Sir, very respectfully,  
 Yours truly,  
 J. H. [Signature]

I am, Sir, very respectfully,  
 Yours truly,  
 J. H. [Signature]

Very respectfully,  
 J. H. [Signature]

I am, Sir, very respectfully,  
 Yours truly,  
 J. H. [Signature]



## 2.4 Pin-out D-type connector

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Factory pin out, (terminal setting).  
Type of connector DB25-S (female).

pin

1	NC
2	Transmit data RS232
3	Receive data RS232
4	NC
5	Clear to send, fixed at +12V
6	Data set ready, fixed at +12V
7	Signal ground
8	Carrier detect, Fixed at +12V
13	DR A Remote baud rate
14	DR B Remote baud rate
15	DR C Remote baud rate
16	DR D Remote baud rate
20	NC
17	CL in +
24	CL in -
23	CL out +
25	CL out -

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Modem setting (see 2.2).  
Type of connector DB25-S (female).

pin

1	NC
2	Receive data RS232
3	Transmit data RS232
4	Request to send fixed at +12V
5	NC
6	NC
7	Signal ground
8	Carrier detect, Fixed at +12V
13	DR A Remote baud rate
14	DR B Remote baud rate
15	DR C Remote baud rate
16	DR D Remote baud rate
20	Data terminal ready, fixed at +12V

## 2.5 Required tools and materials

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No special tool or materials are necessary to install the memory board. A sharp instrument can be used to set the switches. A hand wire-wrap tool is used to strap or unstrap the jumpers.

## 2.6 Adjustments

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No adjustments are necessary.





## CHAPTER 3 MAINTENANCE

### 3.1 Regular inspection

The DTC4S board does not need any special maintenance, other than normally performed with computer systems. Twice a year the board should be removed from the system. The Q-bus edge connector should be inspected for dust, corrosion or other contaminants and if necessary, cleaned with alcohol (Ethanol 99%) and a soft cloth.

### 3.2 Hardware testing

The hardware testing is done by installing the interface in the computer system and running the appropriate diagnostic software (see 3.3).

### 3.3 Software testing

With the interface board no software is delivered. DEC test VKAE can be used to test the module.

## CHAPTER 4 PROGRAMMING

### 4.1 Register definition

Since each serial channel has four registers, each requires four addresses. The "BASE" address corresponds to the Receive/Status Register (RCSR). The addresses of the other registers of the channel then default as follows:

Base	RCSR	(Receive Command/Status Register)
Base+2	RDBR	(Receive Data Buffer Register)
Base+4	XCSR	(Transmitter Command/Status Register)
Base+6	XDBR	(Transmitter Data Buffer Register)

#### RCSR - Receiver Command/Status Register

Bit(s)	Function
15-08	Not used. Read as 0.
07	Receiver Done. Set when an entire character has been received and is ready for input to the processor. This bit is automatically cleared when RDBR is addressed or when the BDCOK H signal goes low. A receiver interrupt is requested by the channel

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100



When this bit is set and receiver interrupt is enabled (bit 6 is also set). Read only bit.

- 06 Interrupt Enable. Set under program control when it is desired to generate a receiver interrupt request when a character is ready for input to the processor (bit 7 is set). Cleared under program control or by the BINIT signal. Read/Write bit.

05-00 Not used. Read as 0.

RDBR - Receiver Data Buffer Register

15-08 Not used. Read as 0.

- 07-00 Contains five to eight data bits in a right-justified format. The most significant bit (MSB) is the optional parity bit. The parity bit is not available if 8 bit/char data is selected. Read-only bit.

XCSR - Transmitter Command/Status Register

15-08 Not used. Read as 0.

- 07 Transmit Ready. Set when XDBR is empty and can accept another character for transmission. It is also set during the power-up sequence by the BDCOK H signal. This bit is automatically cleared when XDBR is loaded. A receiver interrupt is requested by the channel when this bit is set and receiver interrupt is enabled (bit 6 is also set). Read only bit.

- 06 Interrupt Enable. Set under program control when it is desired to generate a transmitter interrupt request when the channel is ready to accept a character for transmission (bit 7 is set). Cleared under program control or by the BINIT signal. Read/Write bit.

05-01 Not used. Read as 0.

- 00 Break. Set or reset under program control. When set, a continuous space level is transmitted. BINIT resets this bit. Read/Write bit.

XDBR - Transmitter Data Buffer Register

15-08 Not used. Read as 0.

- 07-00 Contains five to eight data bits in a right-justified data bits. Loaded under program control for serial transmission to a device. Parity, if enabled, is automatically generated and suffixed to the data as it is transmitted. Write only, always read as 0.



1870-1871. The first year of the war was a year of great suffering and distress to the people of the South.

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1871-1872. The second year of the war was a year of great suffering and distress to the people of the South.

1872-1873. The third year of the war was a year of great suffering and distress to the people of the South.

1873-1874. The fourth year of the war was a year of great suffering and distress to the people of the South.

1874-1875. The fifth year of the war was a year of great suffering and distress to the people of the South. The fifth year of the war was a year of great suffering and distress to the people of the South.

1875-1876. The sixth year of the war was a year of great suffering and distress to the people of the South.

1876-1877. The seventh year of the war was a year of great suffering and distress to the people of the South.

1877-1878. The eighth year of the war was a year of great suffering and distress to the people of the South. The eighth year of the war was a year of great suffering and distress to the people of the South.

1878-1879. The ninth year of the war was a year of great suffering and distress to the people of the South. The ninth year of the war was a year of great suffering and distress to the people of the South.

1879-1880. The tenth year of the war was a year of great suffering and distress to the people of the South.

1880-1881. The eleventh year of the war was a year of great suffering and distress to the people of the South. The eleventh year of the war was a year of great suffering and distress to the people of the South.

1881-1882. The twelfth year of the war was a year of great suffering and distress to the people of the South.

1882-1883. The thirteenth year of the war was a year of great suffering and distress to the people of the South.

1883-1884. The fourteenth year of the war was a year of great suffering and distress to the people of the South. The fourteenth year of the war was a year of great suffering and distress to the people of the South.